North American Drought Monitor – December 2004

Canada: Precipitation in British Columbia during the month of December was generally average or better except in the southeast corner where snowfall accumulations have remained abnormally low. Groundwater levels remained below average in the central Okanagan Valley and average or above average in observation wells reported in other southern and central regions of the province.

Water storage in the major hydroelectric and irrigation reservoirs in Alberta were normal or above normal. Snow accumulations in the eastern Rocky Mountains were below average for this time of the year. The mountain snowpack is an important source of water supply to reservoirs in the spring. On average, the accumulation of snow at this time of the year accounts for 40 to 50 percent of the seasonal total.

Precipitation in the northern Prairie Provinces and much of the territories was quite variable but closer to average. Severely impacted drought areas were adjusted to moderate drought conditions (D1). Due to winter conditions drought impacts are significantly reduced. This northern region faces adverse hydrologic, and the risk of forest, impacts if conditions do not continue to improve by spring. Above average precipitation in northern Manitoba improved the conditions in that region. The region moderately impacted by drought (D1) has been reduced as has the area identified as abnormally dry (D0).

Much of southeast Saskatchewan and parts of the northern and Interlake agricultural regions of Manitoba experienced abnormally dry weather since September 1, however, there are no impacts at this time.

There were no drought related conditions reported in Ontario or Quebec.

In Atlantic Canada precipitation was near average in most areas except in southern New Brunswick where conditions were rated abnormally dry. This rating was based on only one climate reporting station and there were no impacts identified. Monthly runoff was above normal over most of New Brunswick with only the northeast being in the normal range. A thaw and rainfall event near the end of December increased runoff rates in all areas of the Province, except the northeast. Normally runoff is dropping at this time of the year, but streams in the northwest and the southeast increased to as much as 300% of normal by the end of the month.

United States: December was another dry month across the Pacific Northwest, northern Rockies, and northern Plains. December was also drier than normal across much of the central and southern Plains and parts of the Southeast. But much of the southwestern U.S. drought region was wetter than normal for the fourth month in a row, effectively ending the meteorological drought in some areas according to the Palmer Drought Severity Index.

The December precipitation pattern at the primary stations in Alaska was mixed but mostly wetter than normal. Many stations, especially in the central and eastern interior regions, were drier than normal at the 12 month timescale. The pattern was also mixed in Hawaii, but most of the stations were drier than normal. The D0AH area in northern parts of the Island of Hawaii persisted with little or no rainfall reported in the area. One streamflow measuring site near Kamuela reported flows of less than 0.5 cubic feet per second compared to a late-December median of about 1.7 cubic feet per second.

In Puerto Rico, a slow-moving cold front and ample tropical moisture triggered widespread showers across much of the island during the middle of December. However, the southwestern and southeastern sections missed significant rainfall leaving the southeast and parts of the northern and western areas drier than normal, based on National Weather Service radar estimates of precipitation and on Cooperative station precipitation reports.

Long-term moisture deficits persisted in many areas. Much of the central and northern Rockies were dry at the 12 to 24 month timescales. Severe moisture deficits were evident at the 36 to 60 month timescales across much of the West into the northern High Plains and central Plains. To reflect the dry conditions, D0 was added to the southern Washington and northern Oregon Cascades, reflecting a very slow start to the 2004-05 water year and low snowpack. Snowpacks in Oregon, Washington, Idaho, Montana and the eastern slopes of the northern Rockies were significantly below average. Late-December snowpack water contents were only 60 to 75 percent of normal which led to the expansion of D1 and D2 conditions in northwestern Wyoming and adjacent Montana to D2 or D3.

Several low pressure systems tracked eastward across southern California, southern Arizona and southern New Mexico during December, bringing low-elevation rains and high-elevation snows. Precipitation amounts exceeding one-half inch during December 5-6 resulted in improvement from D2 to D1 in southern California's Imperial Valley. Farther north, a broad flow of moist Pacific air brought widespread rain and snow to central and northern California, the Northwest and central Great Basin through December, reducing the D0 dryness across California. End-of-December snowpacks in parts of Arizona, Nevada, central California and Utah were above average. Parts of northeastern Utah improved from D2 to D1 because several sites reported snowpack water content among the greatest 5 percent of all late December observations.

Mexico: December was dry over 76% of the surface of Mexico. The National Meteorological Service (SMN) reported an areal precipitation average of 42% below normal for the entire country. Above normal precipitation was observed this month across sections of Baja California and Chihuahua, and a few pockets of above normal rainfall occurred over central and southeastern Mexico. The conditions described above are well depicted on the soil moisture analysis as computed by NOAA's Climate Prediction Center, indicating drier-than-normal soils from Sinaloa southward into Michoacan, and all along the southern Gulf coast into the Yucatan peninsula.

Southeastern Mexico (Veracruz, Tabasco, northern Oaxaca and Chiapas) has experienced below normal precipitation since July 2004. However, these dry conditions have not drastically impacted the dam system. Since dry conditions in that part of the country were forecasted by the SMN, the regional office of the National Water Commission recommended caution on the water use during the second half of 2004. Recent reports indicated that dam levels are ranging from 70 to 80% of normal. The persistence of long term dry conditions has raised concerns about potential impacts on the power generating systems.

Changes for Mexico on the December NA-DM map included the westward increase of the abnormally dry conditions (D0) over Tamaulipas, the moderate drought conditions (D1) over Guerrero expanding westward into eastern Michoacan, and the integration of a single D1 area over southern Veracruz, Tabasco and northern Chiapas. The wet conditions at the end of the month on the northern part of the Baja California peninsula allowed the removal of the D2 category from the northern tip of the peninsula, and also the retraction of D1 and D0 conditions.